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1. An antenna for u
lite terminal, comprising:
a generally circular
anically scanning for wave si
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a plurality of
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a multiplexor associate
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an analog to digi
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circuitry for formin
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a digital receiver f
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3. The plural: includes

1 4. The antenna of claim 1, wherein said
2 circuitry for forming multiple digital beams does so
3 through FFT techniques.

1 5. The antenna of claim 1, wherein said
2 antenna may be utilized on a mobile vehicle.

1 6. The antenna of claim 1, wherein, said
2 radiation elements form multiple beams for
3 communicating with a plurality of satellites in an
4 equatorial satellite constellation.

1 7. A phased array antenna for an
2 equatorial satellite constellation, comprising:

3 a rotating plate for mechanically scanning
4 for a wavefront of wave signals in an azimuth
5 direction;

6 a plurality of radiation elements
7 positioned on said rotating plate for receiving a
8 plurality of individual waves;

9 apparatus for positioning said radiation
10 elements such that a wavefront of an intended signal
11 will be in alignment with a major axis of said
12 plurality of radiation elements;

13 a plurality of multiplexer devices, each in
14 communication with one of said plurality of radiation
15 elements for converting said plurality of received
16 individual waves into an analog bit stream;

17 an analog to digital converter for
18 converting said analog bit stream to a digital bit

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19 stream;
20 a device for forming multiple digital beam
21 forms from said digital bit stream; and
22 a digital receiver for processing said
23 multiple digital beams.

1 8. The antenna of claim 7, wherein said
2 device for forming multiple digital beam forms
3 utilizes a FFT technique to provide for
4 retrodirectivity.

1 9. The antenna of claim 7, wherein said
2 antenna transmits said multiple digital beams to a
3 plurality of satellites in the equatorial satellite
4 constellation.

1 10. The antenna of claim 8, wherein said
2 plurality of radiation elements are a plurality of
3 interdigitally spaced slotted wave guides.

1 11. The antenna of claim 7, wherein said
2 rotating plate is generally circular in shape.

1 12. The antenna of claim 11, wherein each
2 of said plurality of interdigitally spaced slotted
3 waveguides includes a slotted septum therein.

1 13. A method for forming multiple beams at
2 a commercial satellite antenna, comprising:
3 providing a plurality of radiation elements

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4 on a surface of said commercial satellite antenna for
5 receiving a plurality of individual wave signals;

6 rotating said plurality of radiation
7 elements such that a wavefront of said plurality of
8 individual wave signals is in alignment with a major
9 axis of said plurality of radiation elements;

10 consolidating said plurality of wave
11 signals into a single analog signal;

12 forming multiple beam forms from said
13 single analog signal; and

14 transmitting said multiple beam forms to a
15 plurality of satellites in an equatorial satellite
16 constellation.

1 14. The method of claim 13, further
2 comprising;

3 converting said single analog signal to a
4 digital bit stream; and

5 forming multiple digital beam forms from
6 said digital bit stream.

1 15 The method of claim 14, further
2 comprising:

3 utilizing FFT techniques to form said
4 multiple digital beam forms to provide for satellite
5 retrodirectivity.

1 16. The method of claim 14, further
2 comprising:

3 processing said multiple digital beam forms

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retrodirectivity

4 prior to transmitting.

1 17. The method of claim 14, wherein said
2 plurality of radiation elements electronically scan
3 for said wave signals in elevation.

1 18. The method of claim 17, wherein said
2 surface of said antenna is comprised of a generally
3 circular plate that rotates for scanning mechanically
4 for said wave signals in azimuth.

1 19. The method of claim 18, wherein said
2 plurality of radiation elements are a plurality of
3 cross-slotted waveguides.

1 20. The method of claim 19, wherein said
2 plurality of cross-slotted waveguides are parallel
3 and interdigitally spaced with respect to each other.

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